# SMALL MAMMALS OF THE NATIONAL REACTOR TESTING STATION, IDAHO[1]

Dorald M. Allred[2]

Abstract.— During studies of ectoparasites in 12 plant communities in 1966 and 1967, five types of traps were used to capture 2,478 mammals of the following 11 species: *Dipodomys ordii*, *Eutamias minimus*, *Microtus montanus*, *Onychomys leucogaster*, *Perognathus parvus*, *Peromyscus maniculatus*, *Reithrodontomys megalotis*, *Sorex merriami*, *Spermophilus townsendii*, *Neotoma cinerea*, and *Thomomys talpoides*. The most abundant species was *D. ordii* and the least, *M. montanus*. Plant communities which contained the greatest number of species were the *Chrysothamnus-Artemisia* and *Chrysothamnus*-grass *Tetradymia*. Fewest species were found in the grass and *Juniperus* communities. Greatest populations were in the *Juniperus* and grass communities, and lowest populations in the *Artemisia-Chrysothamnus*, *Artemisia-Atriplex*, and *Chrysothamnus*-grass-*Tetradymia* associations.

Between June 1966 and September 1967, ectoparasites were collected from mammals at the National Reactor Testing Station by personnel of Brigham Young University. The ectoparasites taken in those studies were reported by Allred (1968a, 1968b, 1970, 1971). In his 1968 report, Allred described the physical and ecological characteristics of the station, specific techniques used, and location of the study sites.

The station, situated in southeastern Idaho approximately 30 miles west of Idaho Falls, is in the Snake River Section of the Columbia River Basin. The vegetation is typical of the cool, northern desert shrub biome and is characterized predominantly by sagebrush (*Artemisia*), rabbitbrush (*Chrysothamnus*), and grasses of several genera.

Five types of traps were utilized to collect the small mammals: (1) the YAW live-catch trap, 15 inches long by 4½ inches square and made of three-mesh galvanized hardware cloth with a galvanized sheet metal door and reinforcement bands; (2) a modified Hubbard trap, 8 inches long and 3 inches square and made of galvanized sheet metal; (3) the can pit trap, which consists of an outer galvanized metal case 7 inches in diameter and 14 inches long, with a stainless steel, flanged inner can of slightly smaller size; (4) the Museum Special break-back trap; and (5) the California gopher trap. YAW, Museum Special, and Hubbard traps were baited with rolled oats; other traps were not baited. The latter traps were arranged in a radiating pattern (refer to Allred, 1968), with each type of trap arranged in two lines, 10 stations in each line, each station 10 meters apart with two traps per station (except pit cans, which consisted of one line with one can per station). All traps were operated simultaneously for a three-night period once each month.

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[2]Department of Zoology, Brigham Young University, Provo, Utah 84602.

This paper describes the ecological distribution and relative abundance of the 2,478 small mammals of 11 species trapped in 12 different plant communities (Tables 1-3).

## Results

*Dipodomys ordii* was much more abundant in the juniper community where an understory of *Chrysothamnus* and *Eurotia* was present, and in the grass community than in other communities. In these two communities almost all other species of small mammals were present only in minimal numbers compared to other communities of the station where the species were found. Two species, *Eutamias minimus* and *Peromyscus maniculatus*, occurred in next to their lowest populations in the *Juniperus*–mixed-understory association. *D. ordii* was found in all 12 communities, but populations were lowest in the *Artemisia–Chrysothamnus*–grass association. These kangaroo rats were the next to most abundant mammal in five communities.

*Eutamias minimus* was most abundant in the *Chrysothamnus–Artemisia*–grass association but was not found where grasses were predominant. These chipmunks were present in all other communities, although their populations were lowest in the *Chenopodium–Eurotia*, *Chrysothamnus*–grass–forb, and *Juniperus*–mixed-understory associations. They were the third most abundant species in five of the communities.

*Microtus montanus* was found only in the *Chrysothamnus–Artemisia* and *Elymus*–forb associations, and only in small numbers.

*Onychomys leucogaster* was found most abundantly in the *Chrysothamnus–Artemisia* association; in small numbers in the grass, *Chenopodium–Eurotia*, and *Juniperus*–mixed-understory associations; but was absent in the *Elymus*–forb, *Juniperus* (no under-

Table 1. Vegetative composition and cover in 12 communities at the National Reactor Testing Station, Idaho.

| Plant taxon | Study site and percentage[1] cover | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| *Artemisia* | 24 | 50 | | | | 20 | 30 | 30 | 1 | 68 | 5 | 13 |
| *Atriplex* | | | | | | | | 26 | | | 2 | |
| *Chenopodium* | | | | | | | | | 40 | | | |
| *Chrysothamnus* | 38 | 15 | | | | 30 | 41 | 5 | 1 | | 30 | 15 |
| *Elymus* | | | 50 | | | | | | | | | |
| *Eurotia* | | 10 | | | | | 9 | | 35 | | | 15 |
| *Juniperus* | | | | | 40 | | | | | | | 30 |
| *Opuntia* | 6 | | | | | | | | | 7 | 5 | 1 |
| *Salsola* | | | | | | | 3 | | 2 | | | |
| *Stipa* | | | | 40 | | | | | | | | |
| *Tetradymia* | 2 | | | | | 30 | | | | | 22 | |
| Forbs, misc | 10 | 7 | 34 | 5 | 1 | 5 | | 1 | 1 | 5 | 5 | 6 |
| Grasses, misc. | 15 | 15 | 1 | | | 5 | 1 | | | 7 | 26 | 10 |
| Shrubs, misc. | | | | 5 | | | | | | | | |
| Bare ground | 5 | 3 | 15 | | 59 | 10 | 16 | 38 | 20 | 13 | 5 | 10 |

[1]Nearest whole percent.

TABLE 2. Relative abundance index[1] of some small mammals in different plant communities at the National Reactor Testing Station, Idaho.

| Species | Plant community[2] | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| *Dipodomys ordii* Ord's kangaroo rat | 27.0 | 1.0 | 12.0 | 143.0 | 64.0 | 51.0 | 10.0 | 40.0 | 69.0 | 61.0 | 51.0 | 180.0 |
| *Eutamias minimus* Least chipmunk | 38.5 | 20.5 | 8.5 | 0 | 10.5 | 4.0 | 11.0 | 4.0 | 1.0 | 15.5 | 2.0 | 2.0 |
| *Microtus montanus* Montane vole | 1.3 | 0 | 1.0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Onychomys leucogaster* Northern grasshopper mouse | 21.0 | 12.0 | 0 | 1.0 | 0 | 0 | 9.0 | 0 | 1.0 | 11.0 | 9.0 | 1.0 |
| *Perognathus parvus* Great Basin pocket mouse | 29.7 | 22.3 | 13.0 | 1.0 | 5.3 | 3.0 | 22.0 | 14.7 | 4.0 | 18.3 | 1.3 | 0 |
| *Peromyscus maniculatus* Deer mouse | 9.5 | 6.7 | 36.2 | 1.0 | 5.6 | 11.3 | 11.8 | 13.2 | 6.5 | 5.4 | 5.2 | 2.5 |
| *Reithrodontomys megalotis* Western harvest mouse | 2.0 | 2.0 | 5.0 | 0 | 0 | 0 | 2.0 | 0 | 0 | 7.0 | 1.0 | 0 |
| *Sorex merriami* Merriam's shrew | 1.0 | 0 | 0 | 0 | 0 | 3.0 | 1.0 | 0 | 0 | 0 | 2.0 | 1.0 |
| *Spermophilus townsendii* Townsend's ground squirrel | 1.0 | 8.0 | 11.0 | 0 | 0 | 1.0 | 6.0 | 3.0 | 13.0 | 0 | 1.0 | 0 |
| Average index | 14.6 | 8.1 | 9.6 | 16.2 | 9.5 | 8.1 | 8.1 | 8.3 | 10.5 | 13.1 | 8.1 | 20.7 |

[1]With 1 as the minimum number, the higher the index the greater the population.
[2]Refer to Table 1 for the vegetative components of the communities.

TABLE 3. Sequence of occurrence based on relative abundance index[1] of some small mammals within the same plant community at the National Reactor Testing Station, Idaho.

| Plant community[2] and animal species | Relative abundance index[1] |
|---|---|
| *Artemisia* (site 10) | |
| *Peromyscus maniculatus* | 10.0 |
| *Dipodomys ordii* | 8.7 |
| *Perognathus parvus* | 7.9 |
| *Eutamias minimus* | 4.4 |
| *Onychomys leucogaster* | 1.6 |
| *Reithrodontomys megalotis* | 1.0 |
| *Artemisia–Atriplex* (site 8) | |
| *Peromyscus maniculatus* | 57.3 |
| *Perognathus parvus* | 14.5 |
| *Dipodomys ordii* | 13.3 |
| *Eutamias minimus* | 2.5 |
| *Spermophilus townsendii* | 1.0 |
| *Artemisia–Chrysothamnus–* Grass (site 2) | |
| *Peromyscus maniculatus* | 87.0 |
| *Perognathus parvus* | 67.0 |
| *Eutamias minimus* | 41.0 |
| *Onychomys leucogaster* | 12.0 |
| *Spermophilus townsendii* | 8.0 |
| *Reithrodontomys megalotis* | 2.0 |
| *Dipodomys ordii* | 1.0 |
| *Chenopodium–Eurotia* (site 9) | |
| *Peromyscus maniculatus* | 85.0 |
| *Dipodomys ordii* | 69.0 |
| *Spermophilus townsendii* | 13.0 |
| *Perognathus parvus* | 12.0 |
| *Eutamias minimus* | 2.0 |
| *Onychomys leucogaster* | 1.0 |
| *Chrysothamnus–Artemisia* (site 7) | |
| *Peromyscus maniculatus* | 153.0 |
| *Perognathus parvus* | 66.0 |
| *Eutamias minimus* | 22.0 |
| *Dipodomys ordii* | 10.0 |
| *Onychomys leucogaster* | 9.0 |
| *Spermophilus townsendii* | 6.0 |
| *Reithrodontomys megalotis* | 2.0 |
| *Sorex merriami* | 1.0 |
| *Chrysothamnus–Artemisia–* Grass (site 1) | |
| *Peromyscus maniculatus* | 123.0 |
| *Perognathus parvus* | 89.0 |
| *Eutamias minimus* | 77.0 |
| *Dipodomys ordii* | 27.0 |
| *Onychomys leucogaster* | 21.0 |
| *Microtus montanus* | 5.0 |
| *Reithrodontomys megalotis* | 2.0 |
| *Sorex merriami* | 1.0 |
| *Spermophilus townsendii* | 1.0 |
| *Chrysothamnus–Grass–Tetradymia* (site 11) | |
| *Peromyscus maniculatus* | 68.0 |
| *Dipodomys ordii* | 51.0 |
| *Onychomys leucogaster* | 9.0 |
| *Eutamias minimus* | 4.0 |
| *Perognathus parvus* | 4.0 |
| *Sorex merriami* | 2.0 |
| *Reithrodontomys megalotis* | 1.0 |
| *Spermophilus townsendii* | 1.0 |
| *Chrysothamnus–Tetradymia–Artemisia* (site 6) | |
| *Peromyscus maniculatus* | 147.0 |
| *Dipodomys ordii* | 51.0 |
| *Perognathus parvus* | 9.0 |
| *Eutamias minimus* | 8.0 |
| *Sorex merriami* | 3.0 |
| *Spermophilus townsendii* | 1.0 |
| *Elymus–Forbs* (site 3) | |
| *Peromyscus maniculatus* | 117.8 |
| *Perognathus parvus* | 9.8 |
| *Eutamias minimus* | 4.3 |
| *Dipodomys ordii* | 3.0 |
| *Spermophilus townsendii* | 2.8 |
| *Reithrodontomys megalotis* | 1.3 |
| *Microtus montanus* | 1.0 |
| *Juniperus* (site 5) | |
| *Peromyscus maniculatus* | 4.6 |
| *Dipodomys ordii* | 4.0 |
| *Eutamias minimus* | 1.3 |
| *Perognathus parvus* | 1.0 |
| *Juniperus–Chrysothamnus–Eurotia* (site 12) | |
| *Dipodomys ordii* | 180.0 |
| *Peromyscus maniculatus* | 32.0 |
| *Eutamias minimus* | 4.0 |
| *Onychomys leucogaster* | 1.0 |
| *Sorex merriami* | 1.0 |
| *Oryzopsis–Stipa* (site 4) | |
| *Dipodomys ordii* | 143.0 |
| *Peromyscus maniculatus* | 13.0 |
| *Perognathus parvus* | 3.0 |
| *Onychomys leucogaster* | 1.0 |

[1]With 1 as the minimum number, the higher the index the greater the population.
[2]The predominant plant in each community is listed first, but others listed are also relatively abundant.

story), *Chrysothamnus—Artemisia*, and *Artemisia—Atriplex* communities.

*Perognathus parvus* was present in all of the communities except the *Juniperus*–mixed-understory association. Its populations were highest in the *Chrysothamnus–Artemisia* and lowest in the

grass and *Chrysothamnus*–grass–*Tetradymia* associations. It was the second most abundant species in five communities.

*Peromyscus maniculatus* was present in all 12 communities. It was most abundant in the *Elymus*–forb association and least abundant in the grass community. It was the most abundant species in 10 of the communities and the second most abundant in two.

*Reithrodontomys megalotis* was most abundant in the *Artemisia* community but was not common in any of the six communities where it was found. It was not found in the grass, *Juniperus* (no understory), *Chrysothamnus–Tetradymia–Artemisia*, *Artemisia–Atriplex*, *Chenopodium–Eurotia*, and *Juniperus*–mixed-understory associations.

*Sorex merriami* was most abundant in the *Chrysothamnus–Artemisia–Tetradymia* association. Although not abundant in any of the communities, it was also present in the *Chrysothamnus–Artemisia*, *Chrysothamnus*–grass–*Tetradymia*, and *Juniperus*–mixed-understory associations.

*Spermophilus townsendii* was most abundant in the *Chenopodium–Eurotia* association. It was not found in the grass, *Juniperus* (no understory), *Artemisia*, and *Juniperus*–mixed-understory associations. Its lowest numbers occurred in the *Chrysothamnus–Artemisia* and *Chrysothamnus*–grass–*Tetradymia* communities. It was the least abundant mammal in four of the communities in which it was found.

*Neotoma cinerea*, the bushy-tailed wood rat, was collected once in the *Juniperus* (no understory) community, but in all other collections it was taken near or in volcanic caves and outcroppings.

*Thomomys talpoides*, the northern pocket gopher, was found infrequently in the *Chrysothamnus–Artemisia*, *Artemisia–Chrysothamnus*, *Chenopodium–Eurotia*, and *Juniperus*–mixed-understory associations.

The communities that contained the greatest number of species were the *Chrysothamnus–Artemisia* and *Chrysothamnus*–grass–*Tetradymia*. Fewest species were found in the grass and *Juniperus* (no understory) communities.

Greatest populations of small mammals were found in the *Juniperus*–mixed-understory and grass communities, and fewest mammals in the *Artemisia–Chrysothamnus*, *Chrysothamnus–Artemisia*, *Artemisia–Atriplex*, and *Chrysothamnus*–grass–*Tetradymia* associations.

## References

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